

AIR TRAFFIC TECHNOLOGY INTERNATIONAL 2011

THE INTERNATIONAL REVIEW OF AIR TRAFFIC TECHNOLOGY AND MANAGEMENT

SHOWCASE 2011

OPTIMISED ARRIVALS

Combining CDA with airborne spacing

NEXTGEN IMPLEMENTATION

Operational capabilities set the stage

FUEL SAVER

The FAA develops tools for fuel

STRIKE IT UNLUCKY


Management and modelling to avoid wildlife and volcanic ash



STRETCH WITHOUT STRESS

Keyboard, video and mouse systems are hidden in the background but they play an important role in increasing the efficiency of operators and their IT environment

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 In the ATC industry staff and IT both play a vital role in ensuring that all processes run smoothly and safely. Within the IT environment it is the keyboard, video, mouse (KVM) technology that allows computers and operators to work together effectively. KVM technology enables efficient teamwork in the office, in the tower, in the plant room and even

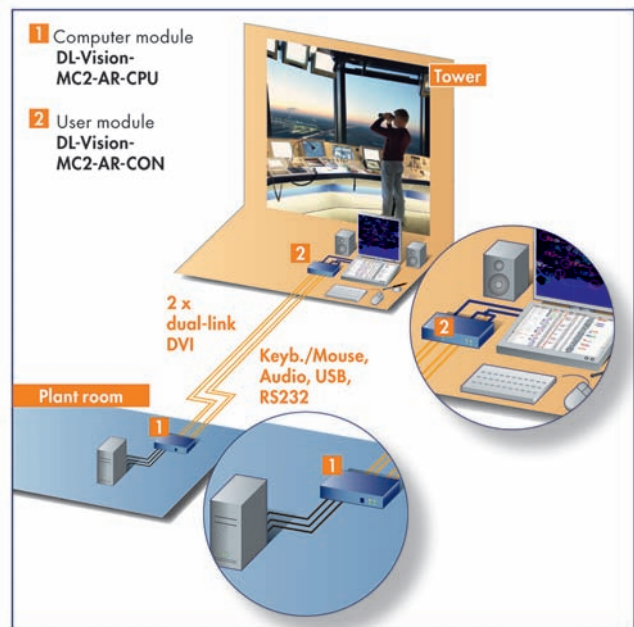


KVM Extender DVIVision, transmitter and receiver device

in the departure lounge. But what exactly does KVM do and how can it meet the varying requirements of different applications? Air traffic control staff, especially in the

tower, must maintain high levels of concentration, which means that heat, noise and computer emissions can be counterproductive. Equally, computers operate more efficiently in a cool, access-restricted area. So it seems that computers and workers cannot work with or without each other.

This conflict can be resolved by physically separating IT equipment and staff, linking them by 'stretching' the interfaces using a KVM extender system. This enables the relocation of computers from the desktop into separate plant rooms, not only



Signal extension: computer is separated from the controller's desk and moved into a remote plant room by deploying a KVM extender system based on fibre optics

creating space and a quieter environment for humans but also improving accessibility to the computers for maintenance.

For mission-critical applications such as air traffic control, preventive monitoring of the status of devices, the distribution of event messages via the network or the ability to create multiple redundancies is supported by KVM systems made by Guntermann & Drunck in Germany.

How to stretch a computer interface?

A KVM extender system enables the stretching of an interface from the computer over a distance of up to several kilometres to where the operator is located. In addition to KVM signals Guntermann & Drunck's Visions toolbox allows the user to customise the configuration by specifying accompanying signals such as audio, RS232,

	DVI dual-link	DVI single-link	VGA	max. video channels	Keyboard / Mouse	Audio	RS232	USB 1.1	USB 2.0	Fiber optics	CAT-x cable	≤ 140 m	≤ 300 m	≤ 400 m	≤ 10 000 m
DL-Vision	X	X		2	X	X	X	X	X	X					X
FIBREVision		X		4	X	X	X	X	X	X					X
DVIVision		X		4	X	X	X	X	X	X	X	X			
LwLVision		X	X	2	X	X	X	X	X	X					X
CATVision			X	4	X	X	X	X	X	X	X	X			

Overview of G&D's KVM Extender – the 'visions'

USB and the cable type as well as the distance that has to be bridged.

The KVM extender system consists of a transmitter and a receiver. The transmitter taps the external interfaces of the computer – keyboard, video and mouse – and uses the existing cabling for signal transmission to the receiver. At the receiver the operator connects his peripherals and operates the remote computer in real time without noticing either distance or separation. The KVM system performs setup and image tuning automatically.

For maintenance, the IT administrator can obtain easy access to the computer via a second console, consisting of keyboard, monitor and mouse, located in the plant room. Consoles can be connected at every KVM transmitter. In this way, the operator is able to continue working without distractions. Maintenance work can be carried out more quickly and system availability is increased.

KVM extenders offer the following advantages over other technologies:

- Simple one-to-one connection;
- Real-time transmission;
- Bridge distances up to 10,000m;
- Independent of operating systems and free of software;
- High resolutions;
- One-to-one performance without delays.

Putting safety first

Since safety is paramount in the aviation industry, KVM extenders from Guntermann & Drunck incorporate a number of safety features. First is the 'screen freeze function', which



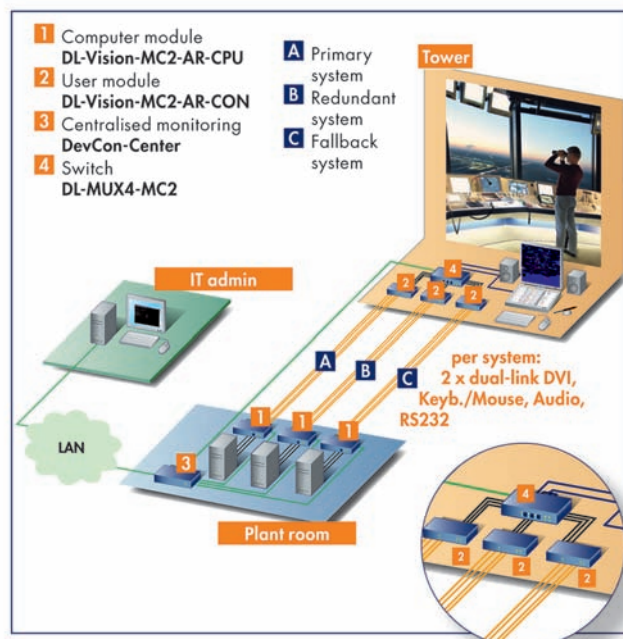
Display in 'screen freeze' mode, highlighted with a red frame

captures the latest available video information in the event that any video information is lost due to an interruption of the transmission line or a breakdown of the graphics adapter in the computer. This means the air traffic controller

has optical information about the last status of the sector until the system is operational again or a back-up system is activated.

Other safety features for mission-critical applications include:

- Event reporting functions (for example for interferences, temperature, operating condition);
- Link control (monitoring the fibre optics interconnection);
- Permanent monitoring of the computer video signal with reporting function;
- Simple network management protocol (SNMP) and syslog messages;
- Two integrated self-monitoring power packs;
- Identification LED at the front panel for physically locating the devices in the rack, activated by web interface.



Signal extension combined with switching gives preventive monitoring, system redundancy and system fallback

Ease of operation

For any users who are working with more than one computer, a KVM switch should be installed. This device enables a user to control multiple computers from a single keyboard, video monitor and mouse.

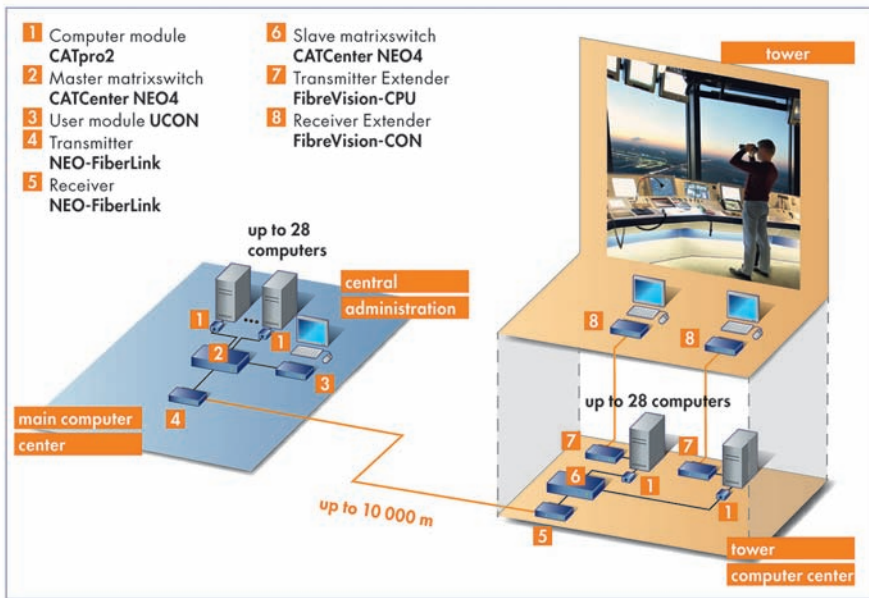
By combining several KVM extenders with a KVM switch, multiple redundancy can be built on the line between computer and air traffic controller and simply switched via a single console. So if one extender line fails, the controller can continue his work independently, safely, easily, immediately and intuitively. A primary, redundant and back-up system are deployed, each consisting of a computer and KVM extender line. The controller can switch between these three systems by simply pressing a button at the KVM switch. This switch, which is installed next to the controller's desk, is connected to each of the three lines.

Extend and switch within one system

The features mentioned above can be combined through the use



Web interface of DL-Vision KVM extender showing critical device status



Example: The main computer centre provides 32 computers. The administrator accesses all the connected computers there as well as all the computers in the tower computer centre. All computers can be accessed, configured and operated in real time and without any perceptible loss in quality. The connection to the remote tower computer centre is established by NEO-FiberLink. The ATCOs in the tower use the computers connected via a 1:1 connection.

of a KVM matrix switch system, which extends and switches signals at the same time.

Guntermann & Drunck offers two versions: the DVICenter and the CATCenter NEO. Both permit multiple users, each equipped only with keyboard, mouse and displays, to simultaneously access a series of computers, even using different platforms. In addition to keyboard, video and mouse, they also switch audio. Configuration is centralised via a web interface or on-screen display, which is operated using a simple menu system or conventional switching via hot keys. DVICenter and CATCenter NEO support both PS/2 and USB keyboards.

Despite the distance between computers and consoles, users enjoy high-quality video with no loss of data.

The two matrix switch systems handle different types of video. DVICenter switches digital (DVI) and CATCenter NEO switches analogue video (VGA). The DVICenter's video resolution is 1,920 x 1,200 at 60Hz, over distances of up to 280m; in full expansion mode the range can be increased to 560m. At this stage the DVICenter connects up to 1,372 computers.

CATCenter NEO provides resolution of 1,920 x 1,440 at 75Hz over a distance of 300m and connects a maximum of 2,048 computers.

The range of both systems can be increased to 10,000m by the use of two new products, NEO-FiberLink and DVI-FiberLink.

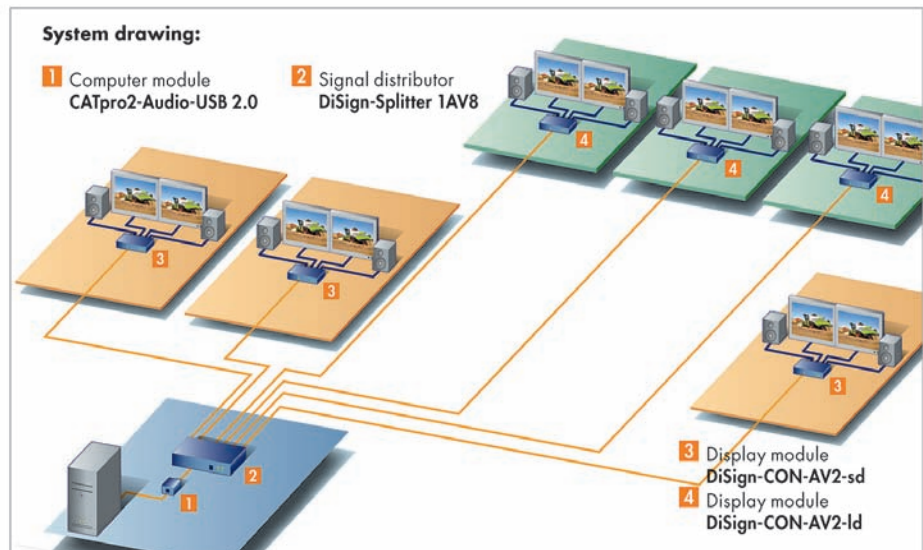
Beyond the tower

Guntermann & Drunck also offers solutions for signal distribution that switch and extend video and audio-video signals for departure lounges

and terminals. The video product line enables the extension of analogue or digital video signals of a computer and at the same time distributes them to several displays.

The DiSign audio-video distribution line comprises three elements: a distributor, a computer module and up to eight receivers. The information or advertising message can be distributed to up to eight displays at a maximum resolution of 1,920 x 1,440 at 75Hz. The system performs image tuning automatically.

The broad range of digital and analogue KVM products within Guntermann & Drunck's portfolio means that there is a solution for every requirement. With 25 years of experience, the company contemplates only IT challenges to deal with, not problems to solve. ❖



DiSign system for audio-video distribution